APPENDIX C: TECHNICAL SUPPORTING DOCUMENTS

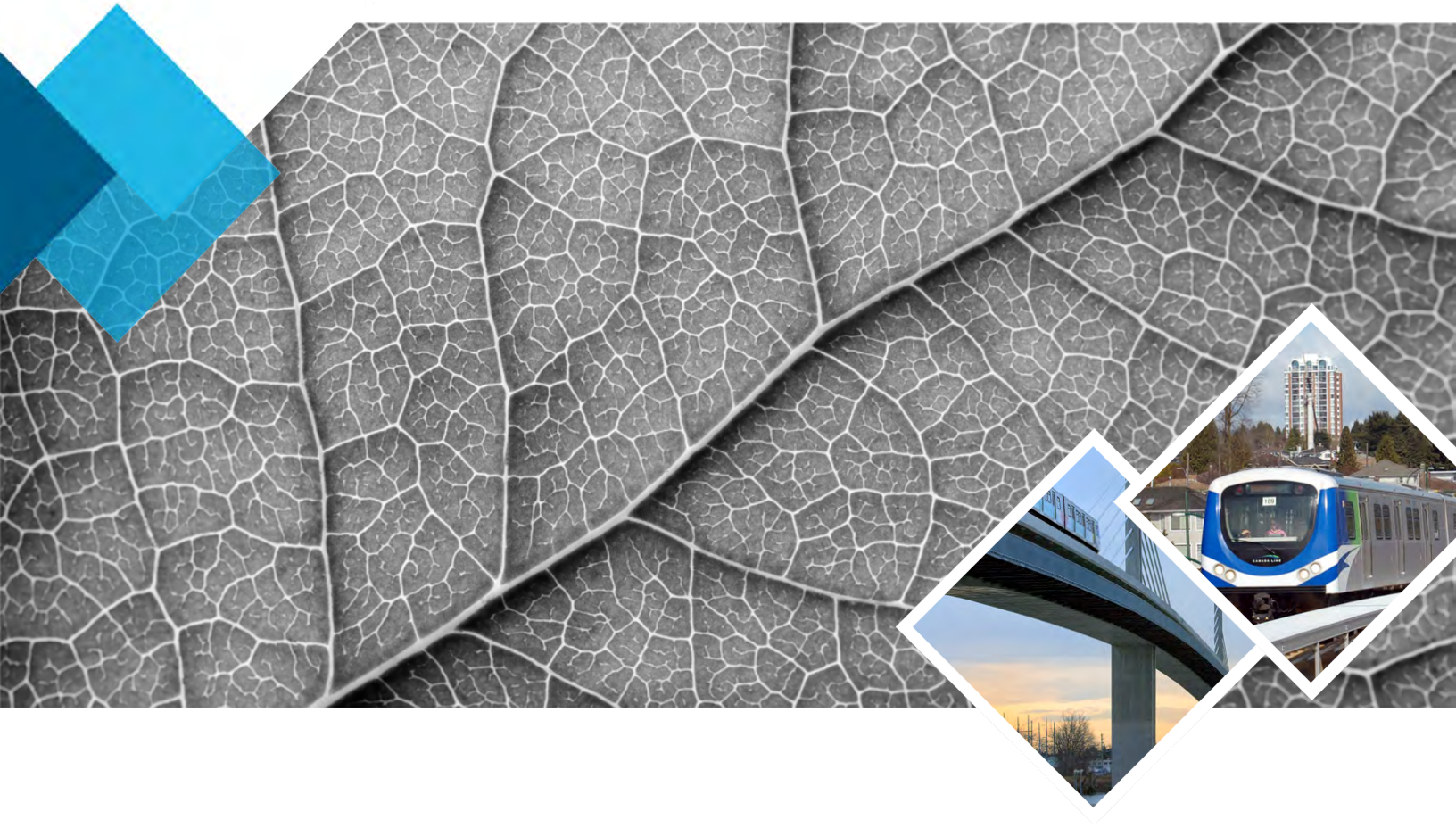
APPENDIX C-2: CONTAMINATION OVERVIEW STUDY

SNC·LAVALIN

Hamilton LRT – Environmental Project Report Addendum

Contamination Overview Study – Final Report

Steer Davies Gleave



Environment & Geoscience

01 | 12 | 2016

Report
Internal ref. 638045

Executive Summary

The Environment & Geoscience business unit of SNC-Lavalin Inc. (SNC-Lavalin) was retained by the City of Hamilton to confirm that the Contamination Overview Study (COS) conducted for the 2011 B-Line EPR LRT (Steer Davies Gleave 2011a) report encompasses the minor design modifications proposed for the new alignment, and to complete a COS for the proposed A-Line spur line running north from the B-Line, along James Street North from new West Harbor GO Station to the Waterfront. The COS also included the proposed Operations Maintenance and Storage Facility (OMSF), for the storage and maintenance of light rail vehicles, to be located on the northeast corner of Aberdeen Avenue and Longwood Road South.

The COS is an update to the natural environment assessment conducted by SNC-Lavalin to support the Environmental Project Report (EPR) filed in 2011 under the Transit Project Assessment Process (TPAP) for the City of Hamilton Light Rail Transit (LRT) Project (B-Line).

The results of the update indicated no changes to the portion of the COS associated with the minor design modifications to the B-Line LRT route. Previous work by others did identify several contaminated properties along the proposed route which may result in soil and groundwater impacts being encountered at the time of construction.

For the proposed A-Line and OMSF, the purpose of the COS was to identify actual or potential sources of contamination in the study areas.

The study area along James Street North and the proposed alignment of the A-Line spur line is located at elevation ranging from approximately 78 m to 97 m above mean sea level (amsl), from north to south along the alignment. The topography in the area is generally flat but slopes slightly northward toward Lake Ontario, which is the nearest surface water body, located approximately 200 m north of the alignment. The regional overburden geology along the alignment is generally comprised of sand, gravelly sand and gravel in the north portion of the alignment with silt and clay with minor sand in the southern portion. Bedrock in the north portion of the alignment is comprised of shale, limestone, dolostone or siltstones bedrock, while the southern portion is comprised of sandstone, shale, and dolostones or siltstones bedrock.

The OMSF study area is located at elevation of approximately 97 m amsl, and the topography in the area is generally flat. The nearest surface water body is an unknown creek crossing the centre of the site in a north-south direction. This creek feeds into Chedoke Creek Watershed north-northwest of the site, which in turn flows into Hamilton Harbour and Lake Ontario. The regional overburden geology in this study area is generally comprised of silt and clay with minor sand. Bedrock is comprised of sandstone, shale, and dolostones or siltstones bedrock.

Based on the findings of the COS, the potential for adverse environmental impacts along James Street North and the proposed alignment of the A-Line spur line is considered medium (i.e. excavated soil may require special handling and disposal). The underlying road base may be comprised of fill material of unknown quality and the roadway has likely also been subjected to de-icing agents. Furthermore, there are localized areas of potential environmental concern adjacent to the alignment, which may have impacted the soils or groundwater which will be encountered during construction. The likelihood of encountering contaminated material will depend on the actual land takings for the project.

Based on the findings of the COS, the potential for adverse environmental impacts at the OMSF site is considered high (i.e. excavated soil will likely require special handling and disposal) considering the historical and on-going industrial operations at the property. Potential off-site sources of impact to soil and groundwater exist in the vicinity of the site due to current industrial and commercial operations on adjacent properties.

During construction, impacts to activities can be mitigated by including special provisions in the contract documents if contaminated soil or groundwater is encountered. Testing of soil should be conducted prior to construction in order to determine the appropriate on-site management or off-site reuse or disposal options. Testing of groundwater should be conducted prior to construction in order to determine the best treatment, disposal, and/or discharge options for groundwater/dewatering effluent and identify the appropriate receiving bodies and/or infrastructure. The analytical results from the soil and groundwater sampling should be compared to the Ministry of the Environment and Climate Change (MOECC) Soil, Ground Water and Sediment Standards (July 2011) in accordance with Ontario Regulation 153/04 (as amended) under Part XV.I of the *Environmental Protection Act*.

Table of Contents

1 INTRODUCTION 1

1.1 Summary Project Description 1
1.2 Scope of Work 1

2 DETAILED OUTLINE DESCRIPTION 3

2.1 B-Line (McMaster University to Queenston Traffic Circle) 3
2.2 A-Line (King Street to Waterfront) 4
2.3 Pedestrian Link to Hunter Street Go Centre 4
2.4 Operations, Maintenance and Storage Facility (OMSF) 4

3 STUDY AREA DESCRIPTION 6

3.1 Land-Uses 6
3.2 Site Geology and Hydrogeology 6

4 RECORDS REVIEW 7

4.1 Previous Studies 7
4.2 Ecolog Eris Database Search 7
4.3 Aerial Photography Review 10
4.4 Historical Fire Insurance Plans 11

5 RECONNAISSANCE OF STUDY AREA 13

6 CONCLUSIONS AND RECOMMENDATIONS 14

7 REFERENCES 15

Tables

Table 1: Alignment: Ecolog ERIS – Potentially Contaminating Activities 7
Table 2: OMSF Site: Ecolog ERIS – Potentially Contaminating Activities..... 8

Figures

Figure 2.1: Hamilton LRT Project Overview..... 4
Figure 2.2: Operations, Maintenance and Storage Facility..... 5

Appendices

A Ecolog ERIS Report

B Historical Aerial Photographs

C Fire Insurance Plans

D Site Photographs

1 INTRODUCTION

1.1 Summary Project Description

The approved 2011 EPR identified the B-Line LRT route alignment to run from McMaster University to Eastgate Square, passing through the City of Hamilton's downtown.

Metrolinx and the City of Hamilton have identified the need to revise the project to:

- Address design modifications to the 2011 EPR LRT (the B-Line, Steer Davies Gleave, 2001a) alignment, moving some sections from side-running at the edge of the street to centre-running in the middle of the roadway, generally between Dundurn and the Delta, and moving one section from centre-running in the middle of the road to side-running at the edge of the road, generally between Dalewood Avenue and Cootes Drive;
- Complete the assessment of a spur line (the A-Line) in mixed traffic along James Street North connecting the new West Harbour GO Station and potentially down to the City's redeveloping Waterfront area;
- Reconfigure the MacNab Street bus terminal and include a high order pedestrian connection from King Street B-Line to Hamilton GO Centre;
- Complete the assessment of an Operations Maintenance and Storage Facility (OMSF) where light rail vehicles would be maintained and stored, along with its run-in track in mixed traffic on Frid Street and Longwood Road to Main Street West, across the Longwood Road bridge; and
- Assess the rehabilitation of Longwood Bridge along with the construction of ancillary pedestrian and active transportation facilities, as previously examined by the City.

As required, a Contamination Overview Study (COS) was conducted to identify actual or potential sources of contamination in the study areas. Each study area assessment included a site inspection and historical review. The site inspections were undertaken on July 8 and September 9, 2016.

Note: A review of the previous 2011 B-Line EPR findings (Section 4.3.4, and **Appendix B-2** of the B-Line LRT EPR, 2011) indicates that there are no changes, from a contamination perspective, along the B-Line route. Given that design modifications currently proposed for the B-Line route are minor, it was determined that no further assessment of the B-Line is required.

1.2 Scope of Work

The following document was developed in support of the EPR Addendum, currently being conducted by Steer Davies Gleave (SDG) on behalf of the City of Hamilton and Metrolinx. Since there are no changes from a contamination perspective along the B-Line route compared to the previous 2011 EPR findings, the objective of this COS is to provide a general overview of the A-Line Spurn and OMSF study areas and identify properties or areas with the potential for site contamination, either within the proposed rehabilitation work area, or in adjacent areas with the potential to migrate onto the proposed work area.

The following activities were conducted in order to collect information on the potential for contamination in each study area:

- *Description of the Study Area*: The location and limit of the work, the current land use, topography and drainage, physiography, geology and hydrogeology of the project area have been described.
- *Review of Records*: Historical information was reviewed to identify any past, actual or potential environmental issues within the project area. This included the identification of activities that have the potential to result in environmental impact, as well as occurrences such as spills. An EcoLog Environmental Risk Information Services (ERIS) database search was commissioned for each study area to obtain information from federal, provincial and private databases that may be relevant to the project area.
- *Review of Historical Aerial Photographs*: Historical aerial photographs depicting each study area were obtained through the National Air Photo Library (operated by Natural Resources Canada) by OPTA information intelligence (OPTA).
- *Review of Historical Fire Insurance Plans*: OPTA was also contracted to obtain site underwriters' fire insurance plans through OPTA Historical Environmental Services Enviroscan™ (Enviroscan) for each study area.
- *Study Area Reconnaissance*: A reconnaissance of each study area was performed by an SNC-Lavalin investigator experienced in the assessment of environmental issues related to the area of concern. The investigator observed the area by a windshield survey. Actual or potential sources of contamination were recorded.

The findings of the activities outlined above were analysed to determine the potential for contamination to soil and/or groundwater in each study area.

2 DETAILED OUTLINE DESCRIPTION

Below is a general description of the project components. A graphical representation geographical extent of the project and project components is presented on **Figure 2.1** (below). Further design details can be found in the Hamilton LRT Design Workbook 1 (SDG, 2016).

2.1 B-Line (McMaster University to Queenston Traffic Circle)

The B-Line commences at McMaster University, with a new combined LRT and bus terminal (serving local Hamilton Street Railway (HSR) buses and regional GO and other bus services) to be constructed in the northeast corner of the intersection of Main Street West at Cootes Drive.

The B-Line route follows the north side of Main Street West to Dalewood Avenue, where it transitions to the centre of the two-way roadway, then continues in the centre of the two-way section of Main Street West to Paradise Road, from which it continues on the north side of the one-way westbound section of Main Street West to Highway 403.

The LRT route then crosses Highway 403 (The Chedoke Expressway) and the associated ramps to/from King Street and Main Street via a dedicated LRT bridge, then follows the south side of King Street West over the CP rail line to Dundurn Street.

From Dundurn Street to The Delta, the existing one-way westbound King Street West/East is, apart from a few short lengths, converted to two–way running with LRT in the centre of the street.

From Dundurn Street the B-Line LRT route continues in the centre of King Street West to James Street, where it connects with the A-Line. Though not currently integrated with the LRT, the existing MacNab bus terminal is reconfigured to provide additional capacity for local buses.

The route continues along King Street East through Downtown and International Village, generally with a single traffic lane on one side of the route only.

From Wellington Street the route continues in the centre of King Street East to The Delta. An underpass is provided to allow the LRT to cross beneath the CP freight line crossing at East Bend Avenue. Road traffic will continue to cross at grade as at present.

From The Delta to Queenston Traffic Circle the B-Line runs in the centre of Main Street East.

A new off-street LRT and bus terminal is provided at Queenston Traffic Circle on the site of the former City Motor Hotel and the adjacent ‘Herbies’ site. The proposed layout allows for the LRT to be extended in future to Eastgate Square.

A total of fourteen LRT stops are provided on the B-Line alignment at McMaster University, Longwood Road, Dundurn Street, Queen Street, James Street, Catharine Street, Victoria Street, Wentworth Street, Sherman Avenue, Scott Park, Delta, Ottawa Street, Kenilworth Avenue and Queenston Traffic Circle.

2.2 A-Line (King Street to Waterfront)

The A-Line route runs from a terminus north of King Street along James Street North to the northern terminus at The Waterfront. The route is shared running with other traffic, except for the terminals at each end of the route.

Connections are provided between the A and B-Lines at the King Street / James Street intersection to allow A-Line vehicles to get to and from the OMSF via the B-Line route.

A total of five LRT stops are provided at MacNab Terminal, Cannon Street, West Harbour GO Station, Ferrie Street and The Waterfront.

2.3 Pedestrian Link to Hunter Street Go Centre

The pedestrian link from the A and B-Lines to the Hunter Street GO Station will be developed as part of the next stage of project development.

2.4 Operations, Maintenance and Storage Facility (OMSF)

A preferred site for the OMSF has been identified near Longwood Road, north of Aberdeen St.

This is connected to the B-Line route via shared-running tracks on Frid Street and Longwood Road. A delta junction at the Main Street/Longwood Road intersection allows light rail vehicles to enter and leave service from either direction (see **Figure 2.2**, below).

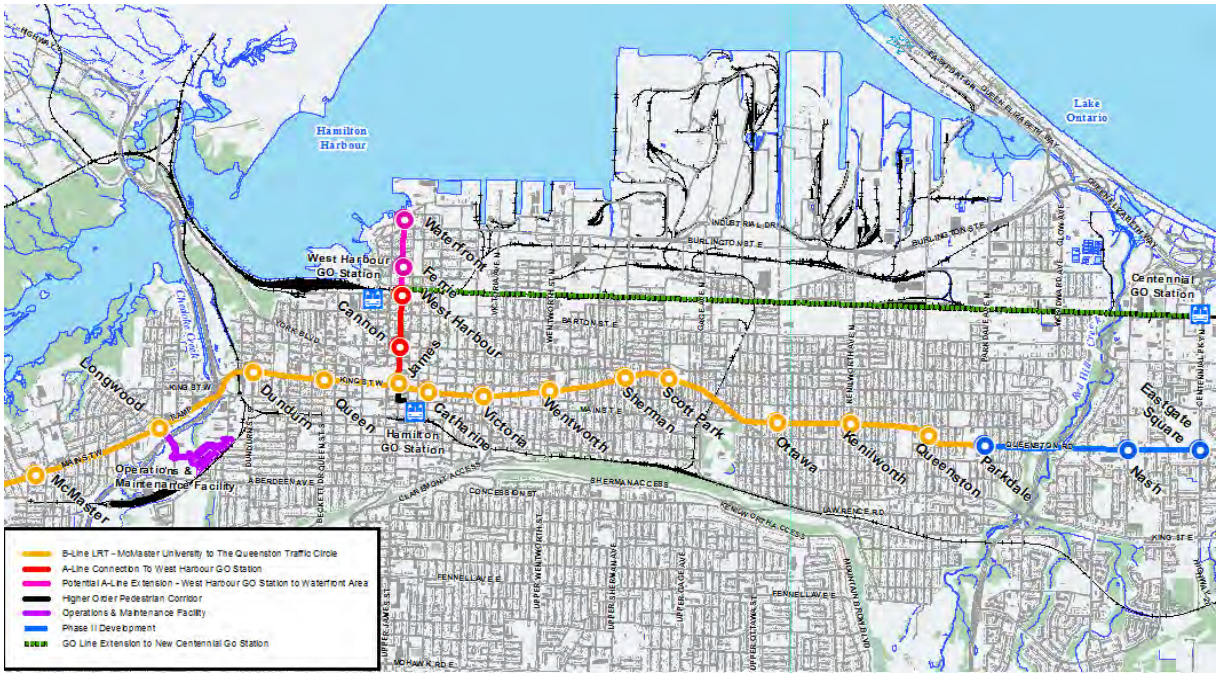


Figure 2.1: Hamilton LRT Project Overview

Legend

- Operations and Maintenance Facility (OMSF)
- Proposed LRT B-Line 2016
- Road
- Drainage

N

40 20 0 40 80 120 M

Scale: 1:2,000

SNC·LAVALIN

Hamilton LRT Environmental Assessment Addendum
Contaminant Overview Study Update

Operations Maintenance Facility (OMSF)

Date: 2016/11/28	**File Number:** 638045	**Sub Code:** ENVR
Figure: **2.2**		**Rev.** **0**

Document Path: I:\E&W\638045 - Hamilton_LRT-SDG-EPR Support\4.0 Execution\4.7 Working Versions\4.7.5 GIS\MXD\20161128_COS_Fig_2_2_OMSF.mxd

3 STUDY AREA DESCRIPTION

3.1 Land-Uses

The land use in all study areas is a mixture of residential, commercial and industrial uses.

3.2 Site Geology and Hydrogeology

As noted above in Section 1, there are no changes from a contamination perspective along the B-Line route compared to the previous 2011 EPR findings. An overview of the B-line site geology and hydrogeology can be found in Section 4 of the 2011 B-Line EPR (SDG, 2011a).

A-Line Spur Line

The regional overburden geology, as interpreted by Map 2556 (Ontario Geological Survey, 1991), is generally comprised of sand, gravelly sand and gravel in the north portion of the alignment. The southern portion is comprised of silt and clay with minor sand. Bedrock in the north portion of the alignment, as interpreted by Map 2544 (Ontario Geological Survey, 1991), is comprised of shale, limestone, dolostone or siltstones bedrock, while the southern portion is comprised of sandstone, shale, and dolostone or siltstones bedrock.

The site is located at elevation ranging from approximately 78 m to 97 m above mean sea level (amsl), from north to south along the alignment. The topography in the area is generally flat but slopes slightly northward toward Lake Ontario, which is the nearest surface water body, located approximately 200 m north of the alignment. Surface groundwater flow is expected to flow to the north towards Lake Ontario.

OMSF Site

The regional overburden geology, as interpreted by Map 2556 (Ontario Geological Survey, 1991), is generally comprised of silt and clay with minor sand. Bedrock, as interpreted by Map 2544 (Ontario Geological Survey, 1991), is comprised of sandstone, shale, dolostones or siltstones bedrock.

The site is located at elevation of approximately 97 m amsl, and the topography in the area is generally flat.

The nearest surface water body is an unknown creek crossing the centre of the site in a north-south direction. This creek feeds into the Chedoke Creek Watershed located north-northwest of the site, which in turn flows into Hamilton Harbour and Lake Ontario.

4 RECORDS REVIEW

4.1 Previous Studies

B-Line Spur

As noted above in Section 1.1, the review of the previous 2011 B-Line EPR findings (Section 4.3.4, and **Appendix B-2** of the B-Line LRT EPR, 2011) indicates that there are no changes, from a contamination perspective, along the B-Line route. Previous B-Line contaminated site survey data can be found in **Appendix B-2** of the B-Line LRT EPR, 2011.

4.2 Ecolog Eris Database Search

EcoLog ERIS specializes in providing environmental and historical information compiled from government and private source records. An EcoLog ERIS database search was commissioned for each study area. EcoLog ERIS Reports for the A-Line Sur and OMSF are included in **Appendix A**.

A-Line Spur Line

The EcoLog ERIS database search did not identify potential environmental concerns directly within James Street North alignment. Relevant information pertaining to potential environmental concerns within a 250 m radius of the preferred alignment is summarized in **Table 1** below.

Table 1: Alignment: Ecolog ERIS – Potentially Contaminating Activities

Database Result	Number of Sites within 250 m of Alignment
Certificates of Approval	30
Commercial Fuel Oil Tanks	3
Environmental Activity and Sector Registry	3
Environmental Registry	6
Environmental Compliance Approval	4
List of TSSA Expired Facilities	14
Contaminated Sites on Federal land	1
Fuel Storage Tank	12
Fuel Storage Tank - Historic	11
Ontario Regulation 347 Waste Generators Summary	300
TSSA Incidents	7
National PCB Inventory	22
National Pollutant Release Inventory	2
Ontario Oil and Gas Wells	1
Inventory of PCB Storage Sites	17
Pesticide Register	12
TSSA Pipeline Incidents	1
Private and Retail Fuel Storage Tanks	9
Ontario Regulation 347 Waste Receivers Summary	3
Record of Site Condition	9
Retail Fuel Storage Tanks	5
Scott's Manufacturing Directory	50
Ontario Spills	52

Database Result	Number of Sites within 250 m of Alignment
TSSA Variances for Abandonment of Underground Storage Tanks	2
Waste Disposal Sites – MOE CA Inventory	2

For surrounding properties, the findings in the EcoLog ERIS report indicated that the Line-A Spur Line alignment is located within an area of commercial and/or industrial businesses that are or were registered waste generators. Among the 300 properties registered as waste generators, the subject wastes generated include Paint/Pigment/Coating Residues (Waste Code 145), Aliphatic Solvents (Waste Code 212), Waste Oils and Lubricants (Waste Code 252), Oil Skimmings & Sludges (Waste Code 251), Waste Oils / Sludges (Waste Code 251), Emulsified Oils (Waste Code 253), Petroleum Distillates (Waste Code 213), Photoprocessing Waste (Waste Code 264), Pathological Wastes (Waste Code 312), PCBs (Waste Code 243) and Light Fuels (Waste Code 221).

The Contaminated Site on Federal Land, located approximately 30 m west of the alignment, is identified as Hamilton Emergency and appears to be associated with Fisheries and Oceans Canada.

The report also identified the locations of twenty-nine (29) retail fuel storage tanks/fuel storage tanks within a 250 m radius of the alignment. These tanks have listed capacities ranging from 4,500 L to 100,000 L. The associated properties are listed as gasoline stations, or owned by several different companies, as well as the City of Hamilton, including Hamilton Hydro and the Port Authority.

The Ontario Spill Database indicated that 52 oil spills ranging from 10 L to 600 L occurred with a 250 m radius of the alignment between 1988 and 2015. Environmental impact due to some of these spills is considered possible.

Within a 250 m radius of the alignment, fifty (50) properties are listed in the Scott's Manufacturing Directory.

The Water Well Information System (WWIS) database identified thirty-nine (39) wells within 250 m of the alignment, used for various purposes: domestic and commercial water source; observation wells.

OMSF Site and Surrounding Properties

The EcoLog ERIS database search identifies potential environmental concerns directly within the OMSF Site's boundaries. Relevant information pertaining to potential environmental concerns within the OMSF Site's boundaries and within a 250 m radius of the OMSF Site's boundaries is summarized in **Table 2** below.

Table 2: OMSF Site: Ecolog ERIS – Potentially Contaminating Activities

Database Result	Within OMSF Site	Number of Sites within 250 m of OMSF Site
Certificates of Approval	3	38
Environmental Activity and Sector Registry	0	2
Environmental Registry	1	18
Environmental Compliance Approval	0	1
List of TSSA Expired Facilities	0	14
Fuel Storage Tank	0	2
Fuel Storage Tank - Historic	0	2

Database Result	Within OMSF Site	Number of Sites within 250 m of OMSF Site
Ontario Regulation 347 Waste Generators Summary	12	188
TSSA Incidents	0	4
TSSA Historic Incidents	1	1
National PCB Inventory	6	7
National Pollutant Release Inventory	1	44
Inventory of PCB Storage Sites	5	11
TSSA Pipeline Incidents	0	1
Private and Retail Fuel Storage Tanks	0	4
Record of Site Condition	0	6
Scott's Manufacturing Directory	2	44
Ontario Spills	1	37
Waste Disposal Sites – MOE CA Inventory	0	1

OMSF Site

Various companies have occupied the property located at 606 Aberdeen Avenue including registered waste generators such as Hamilton Metal Trading Inc., CTK Railcar Service Inc. and Elko Industrial Trading. These companies were listed as a generators of hazardous wastes from 1986 to 2011, with subject wastes including Paint/Pigment/Coating Residues (Waste Code 145), Aromatics Solvents (Waste Code 211), Waste Oils and Lubricants (Waste Code 252), Halogenated Solvents (Waste Code 241), Alkaline Wastes – Other Metals (Waste Code 122), Aliphatic Solvents (Waste Code 212), Polymeric Resins (Waste Code 232), and PCBs (Waste Code 243).

The TSSA Historic Incident is related to a natural gas pipeline release in 2007.

The property was registered in the National PCB Inventory from 1990 to 2004 with three capacitors with high levels of PCB (>1,000 ppm). The PCB types included Askarels, and specifically Inerteen.

This property was also listed in the Scott's Manufacturer Directory as a commercial printing company (Horizon Graphics), an office and store fixtures (Enrack Systems Inc.) in 1988.

One listing for a sewage spill was identified on the property; with environmental impact listed as possible. No other details were available.

Surrounding properties

The findings in the EcoLog ERIS report indicated that the OMSF's site is located within an area of commercial and/or industrial businesses that are or were registered waste generators from 1986 to 2015.

Three properties located between 15 m and 125 m from the OMSF's boundaries are listed in the National Pollutant Release Inventory database, including Canadian Drawn Steel from 1998 and 2003 and Forsythe Lubrication from 1986 and 2015.

Five properties located between 35 m and 235 m from the OMSF's boundaries are listed in the TSSA Expired Facilities database from 1990 and 2010. Three properties located between 35 m and 235 m from the OMSF's boundaries are listed in the Private and Retail Fuel Storage Tanks database.

Two properties are listed in Inventory of PCB Storage Sites located between 35 m (Camco Inc. between 1990 and 2004) and 155 m (Hamilton Board of Education between 1995 and 2000) from the OMSF's boundaries.

Several companies located between 20 m and 245 m from the OMSF's boundaries was listed in the Scott's Manufacturer Directory.

The Ontario Spills database identified thirty-seven (37) spills between 20 m and 250 m from the OMSF's boundaries including:

- In 1991, 675 L of diesel fuel was released to the ground on Highway 403 eastbound at Main Street. Environmental impact was confirmed;
- In 1995 and 1997, 67.5 m3 and 4,500 L of wash line wastewater was released to the ground and sewer at 175 Londwood Road South, respectively. Environmental impact was possible;
- In 1997, 150 L of diesel fuel was released to the ground at 155 Chatman Street. Environmental impact was possible;
- In 2000, 200 L of diesel fuel was released to the ground at 400 Longwood Street South. Environmental impact was confirmed.

One Waste Disposal Site (Chatham & THB Dump), closed in 1930, was identified 20 m from the OMSF's boundaries.

The Water Well Information System (WWIS) database identified twelve (12) wells (domestic, commercial and observation wells) on the surrounding properties.

4.3 Aerial Photography Review

OPTA was contracted to provide copies of aerial photographs covering each study area. Copies of the available aerial photographs reviewed are provided in **Appendix B**. In general, the available aerial photographs each cover a significant area and provide only large-scale (low-resolution) information, which precludes a detailed interpretation of these photographs.

A-Line Spur Line

The 1934 photograph shows the area along the alignment is developed and appears to be a mixture of residential, commercial and industrial uses. James Street North and all its intersection are built. A CN yard is located at Strachan Street East. The port area north of Burlington Street East appears under development.

The 1966 photograph indicated some changes in building configuration along James Street North. New buildings are noted in the port area.

The aerial photograph of 1990 indicates the port has continued its expansion. York Boulevard which previously extended to King Street now ends at Bay Street north. New building configurations are noted in the area.

The 2015 Google Map image is similar to the 1990 photograph.

OMSF Site

The 1934 photograph shows that the site is developed and is of industrial use. Aberdeen Avenue and Longwood Road South are constructed. There is one building in the southern portion of the site which appears to be of same configuration as today. A round house is noted in the centre of the site, with an additional building located north of the round house. The northern portion of the site is a wooded area. A creek appears to be running in a north-south direction in the centre of the site. Industrial buildings are noted adjacent to the west followed by a wooded area. A CN track and yard is noted south of the site followed by agricultural lands. A residential neighbourhood is developing east of the site. A wooded area is noted north of the site followed by an industrial/commercial development. Industrial/commercial buildings appear to be under development northeast of the site.

The 1950 photograph shows the presence of additional industrial buildings adjacent west of the site. The residential development east of the site continues as well as the commercial/industrial development northeast and north of the site. Additional residential development is also apparent north of the site.

The 1973 photograph indicates that the area around the site continues its residential, commercial and industrial development. The Chedoke Expressway has been constructed, and includes portions of the CN yard previously located south of the site. Additional buildings appear to be present on the site south of the round house. A parking lot is noted west of the industrial buildings adjacent and west of the site.

The 2015 Google Map image indicates that only the original main building is present on site. The land adjacent to the west is now vacant; however, there are two new commercial/industrial buildings to the north of this location. A commercial/industrial building is also noted on the former parking lot west of the site. A large commercial/industrial building has been constructed southwest of the site north of the CN tracks/yard.

4.4 Historical Fire Insurance Plans

OPTA was contracted to obtain property underwriters' fire insurance plan maps for the two study areas. Fire Insurance Plans (FIPs) from the years 1947 and 1964 were available for both study areas. A summary of the information from the FIPs is presented below, and copies of plans are included in **Appendix C**.

A-Line Spur Line

The 1947 FIPs confirmed that the study area is of residential, commercial and industrial uses.

In the 1947 FIPs, the following potentially contaminating activities were noted north to south along the alignment:

- James Street North and Guise Street West (Leander Drive): Hamilton Harbour Commissioners and Marine Dock Yard, at the north end of the alignment.
- James Street North and McCauley Street East: An underground storage tank (UST) is noted on a property on the southeast corner of the intersection.
- James Street North, east side between Picton Street East and Ferrie Street East: An auto body repairs shop with one UST is noted.

- James Street North and Simcoe Street West: Canadian Cottons Limited (Ontario Mill) is present on the northwest corner of the intersection, with a dye house located approximately 100 west of alignment.
- James Street North and Strachan Street: Canadian National Rail Yard with an Express building and tracks.
- James Street North and Colborne Street: Gurney Scale Co., located at the northwest corner of the intersection, which appears to be a recycling company for fuel, coal and refuse, barrels, electrical heat and steam equipment.

In the 1964 FIPs, the following changes were observed:

- James Street North and Burlington Street West: Auto garage with one (1) UST is present at the northeast corner of the intersection.
- James Street North and Burlington Street West: Auto garage with one (1) UST is present at the southwest corner of the intersection.
- James Street North and McCauley Street East: The UST formerly present on a property on the southeast corner is no longer present. The lot is occupied by Railway and Power Engineering and a clothing factory.
- James Street North and Picton Street East: One (1) UST is present on a property at the northeast corner of the intersection.
- McNab Street North and Murray Street West: Auto garage with one (1) UST is noted approximately 100 west of the alignment.
- James Street North and Colborne Street: Auto garage with one (1) UST is present at the northwest intersection.

OMSF Site

The 1947 FIP shows the area south of the tracks is residential with Aberdeen Avenue already built. No other plans were available.

A review of the 1964 FIPs identified the following potentially contaminating activities in the vicinity of the site:

- The location of the site is the former Toronto - Hamilton & Buffalo Railway, with roundhouse and supporting buildings.
- A series of rail tracks lead to the round house in the center of the site with a diesel repairs and Storage shop. The presence of four oil tanks (surround by a concrete dyke wall) is noted east of the shop.
- A building occupied by a fruit warehouse and repair shop is present north of the round house with a UST. A spur line is noted north of this building which leads to the Canadian Drawn Steel Co. Ltd. Building. One oil storage shed is present adjacent north of this building.

5 RECONNAISSANCE OF STUDY AREA

Surveys for each of the A-Line and OMSF study areas were conducted on July 8 and September 9, 2016 by an SNC-Lavalin Site inspector. Site photographs were taken and are included in **Appendix D**. Key observations made during the field visit are described below:

A-Line Spur Line

The windshield survey revealed that the land use within and adjacent to the study area is predominantly residential and commercial. However, the following potentially contaminating activities were noted along the alignment:

- Harbour West - Hamilton Port Authority: Fuel pumping station with three (3) USTs. These USTs are located approximately 100 m northwest of the alignment;
- 522 James Street North: A marine supplies shop with oil change services located adjacent to the northern portion of the alignment;
- 22 Cannon Street West: Auto repairs shop located approximately 100 m west of the alignment;
- Cannon Street East and Hughson Street North: Two (2) auto repairs shops located approximately 100 m east of the alignment.

In addition to the aforementioned potential contaminating activities noted along the alignment, there is the soil conditions within the alignment associated with the roadway itself. The subgrade material underlying the surface of the road may be fill material of unknown quality, which has also been subjected to years to de-icing and may be considered potential impacted as a result.

OMSF Site

The windshield survey revealed that the land use within and adjacent to the study area is a mix of residential, commercial and industrial. However, the following potentially contaminating activities were noted at the OMSF site:

- Scrap metals and stains were noted in warehouse building. The floor consists of old wood tiles;
- An old spur line is still present north of the building;
- A train tanker of unknown content was noted north of the building; and
- Scrap metal was noted in the northern portion of the site.

The following concerns were noted on the surrounding properties:

- A steel manufacturer, Steel Republic, is present on the adjacent property to the north and east of the site;
- Two (2) above ground storage tanks (ASTs) were observed on the adjacent property to the east of the site;
- One (1) auto repairs shop is located approximately 150 m east of the site;
- Tanks of unknown content on CN property are located approximately 50 m east of the site; and
- Fill from unknown origin was present on the adjacent property west of the site.

6 CONCLUSIONS AND RECOMMENDATIONS

The key findings of the contamination overview study are as follows:

B-Line LRT Route

As noted above, the review of the previous 2011 B-Line EPR findings indicates that there are no changes, from a contamination perspective, along the B-Line route. Previous work by others did identify several contaminated properties along the proposed route which may result in soil and groundwater impacts being encountered at the time of construction.

A-Line Spur Line

Based on the findings above, the potential for adverse environmental impacts along the alignment is considered medium (i.e. excavated soil may require special handling and disposal). The underlying road base may be comprised of fill material of unknown quality and the roadway has likely also been subjected to de-icing agents. Furthermore, there are localized areas of potential environmental concern adjacent to the alignment, which may have impacted the soils or groundwater which will be encountered during construction. The likelihood of encountering contaminated material will depend on the actual land takings for the project.

OMSF Site

Based on the findings above, the potential for adverse environmental impacts directly within the site is considered high (i.e. excavated soil will likely require special handling and disposal) considering the historical and on-going industrial operations at the property. Potential off-site sources of impact to soil and groundwater exist in the vicinity of the site due to current industrial and commercial operations on adjacent properties.

During construction, impacts to activities can be mitigated by including special provisions in the contract documents if contaminated soil or groundwater is encountered. Testing of soil should be conducted prior to construction in order to determine the appropriate on-site management or off-site reuse or disposal options. Testing of groundwater should be conducted prior to construction in order to determine the best treatment, disposal, and/or discharge options for groundwater/dewatering effluent and identify the appropriate receiving bodies and/or infrastructure. The analytical results from the soil and groundwater sampling should be compared to the Ministry of the Environment and Climate Change (MOECC) Soil, Ground Water and Sediment Standards (July 2011) in accordance with Ontario Regulation 153/04 (as amended) under Part XV.I of the *Environmental Protection Act* (EPA).

The City's Contaminated Sites Management Program For Municipal Works should be consulted prior to construction.

7 REFERENCES

Canadian Standards Association (CSA), 2001. "Phase 1 Environmental Site Assessment" Standard Z768-01 (R2012).

Ministry of the Environment (MOE), 2011. "Ontario Regulation 153/04 (as amended), Record of Site Condition - Part XV.1 of the Environmental Protection Act," October 31, 2011.

Barnett, P.J., Cowan, W.R. and Henry, A.P., 1991. Quaternary Geology of Ontario, Southern Sheet, Ontario Geological Survey Map 2556, Scale 1:1,000,000.

Ontario Geological Survey, 1991. Bedrock Geology of Ontario, Southern Sheet, Ontario Geological Survey Map 2544, scale 1:1,000,000.

City of Hamilton, 2004, City's Contaminated Sites Management Program For Municipal Works.

Steer Davies Gleave, SNC-Lavalin and Dialog. 2011a. Hamilton Rapid Transit Preliminary Design and Feasibility Study. Environmental Project Report. B-Line.

Steer Davies Gleave, SNC-Lavalin Inc. and Dialog. 2011b. Hamilton Rapid Transit Preliminary Design and Feasibility Study. B-Line Environmental Conditions Report.

Steer Davies Gleave, SNC-Lavalin Inc. and Dialog. 2011c. Hamilton Rapid Transit Preliminary Design and Feasibility Study. A-Line Environmental Conditions Report.

Steer Davies Gleave, 2016. Hamilton LRT Design Workbook 1 for City of Hamilton and Metrolinx (SDG Ref:22879301).